



HVAC DRAWINGS



100% Design submittal

Project No -----

Project Type: Hospital

Area: 382 Square Meters

Location: Malalai Maternity Hospital, Kabul, Afghanistan

Client Name: -----

No of Stories: 3 Stories



PROJECT NAME:

FISTULA CARE CENTER IN MALALAI
MATERNITY HOSPITAL IN
KABUL- AFGHANISTAN

OWNER:

AFGHAN FAMILY GUIDANCE ASSOCIATION
FOCAL NAME:
E-MAIL:
CELL #:



DEVELOPER:

WEB:
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PHONE #:
FAX #:

CLIENT:

MINISTRY OF PUBLIC HEALTH

PROJECT NO / KEY:

DESIGN / PROJECT STATUS:
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KEYPLAN:



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REVIEWED BY: - Eng.Nasratullah	
APPROVED BY: - AFGA	

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SCALE: AS NOTED	ISSUE DATE: 10-Dec-2025

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فهرست نقشه ها

بخش تهویه و تسخين

صفحه	شماره نقشه	عنوان نقشه	مقياس
	M1	فهرست	NTS
	M2	تشریح مخففات و سمبول ها	NTS
	M3	پلان سيستم تهويه و تسخين تبريد منزل اول	NTS
	M4	پلان سيستم تهويه و تسخين تبريد منزل دوم	NTS
	M5	پلان سيستم تهويه و تسخين تبريد منزل سوم	NTS
	M6	پلان منزل بام تعمير	NTS
	M7	مشخصات کلکتورها ، جعبه توزيع ، نل های افقی و رادیاتور ها	NTS
	M8	جدول و مشخصات رادیاتور ها	NTS
	M9	دیتیل و مشخصات رادیاتور ها	NTS
	M10	دیتیل و مشخصات رادیاتور ها با جعبه توزيع نل ها	NTS
	M11	مشخصات جعبه توزيع پايپ های رفت برگشت	NTS
	M12	دیتیل و مشخصات ایرکندیشن ها	NTS
	M13	جدول های عمومی بام مشخصات ایرکندیشن ها	NTS
	M14	دیتیل و مشخصات گریل ها	NTS
	M15	دیتیل و مشخصات لوور	NTS
	M16	دیتیل و جدول مشخصات پکه ها	NTS
	M17	دیتیل و جدول مشخصات پکه های دیواری	NTS
	M18	دیتیل و مشخصات پکه های بالا بام تعمير	NTS
	M19	مشخصات پمپ نورانی سيستم	NTS
	M20	دیتیل جدول و مشخصات تجهيزات اساسی سيستم	NTS
	M21	دیتیل و مشخصات گره حرارتی نل های رفت برگشت	NTS
	-----	NOT USED	NTS
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	-----	NOT USED	NTS

دیزاین نقشه های بخش تهویه
تسخين و تبريد تعمير

HEATING COOLING &
VENTILATION SYSTEM DESIGN
PLAN

D

C

B

A

دیتیل و تشریح سمبول ها ومخففات

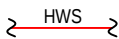
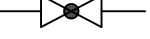
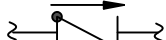
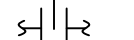
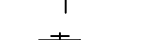
ABBREVIATIONS

AC :- AIR CONDITIONER
AFF :- ABOVE FINISH FLOOR
AHU :- AIR HANDLING UNIT
AMPS :- AMPERES
B.D :- BACKDRAFT DAMPER
B.H :- BASE BOARD HEATER
B.M.O :- BELL MOUTH OPENING
BOP :- BOTTOM OF PIPE
BTU/H :- BRITISH THERMAL UNITS PER HOUR
CD :- CONDENSATE DRAIN
CF :- CEILING FAN
CFM :- CUBIC FEET PER MINUTE
CMH :- CUBIC METER PER HOUR
CONN :- CONNECTION
CORR :- CORRUGATED
CU :- CONDENSING UNIT
DB :- DRY BULB
DH :- DIESEL UNIT HEATER
DIA :- DIAMETER
D.L :- DOOR LOUVER
DT :- DAY TANK
DWG :- DRAWING
EF :- EXHAUST FAN
EL :- EXHAUST LOUVER
ENT :- ENTERING
EAG :- EXHAUST AIR GRILLE
EXT :- EXTERNAL
F.A.D :- FRESH AIR DUCT
F.S.D :- FIRE SMOKE DAMPER
FLA :- FULL LOAD AMPERES
HP :- HORSE POWER
HVAC :- HEATING VENTILATION & AIR CONDITIONING

ABBREVIATIONS

LVG :- LEAVING
MRAD :- MOTORIZED RETURN (RECIRCULATION)
MAID :- MOTORIZED AIR INTAKE DAMPER
MEAD :- MOTORIZED EXHAUST AIR DAMPER
M.D :- MOTORIZED DAMPER
mm :- MILLIMETERS
MPS :- METERS PER SECOND
NC :- NORMALLY CLOSED
NO :- NORMALLY OPEN
OC :- ON CENTERS
OSA :- OUTSIDE AIR
P :- PUMP
PACU :- PACKAGE AIR CONDITIONING UNIT
P.S :- POWER SUPPLY
RAG :- RETURN AIR GRILLE
R.D :- RETURN AIR DUCT
RED :- REDUCTION/REDUCER
R.G :- RETURN AIR GRILLE
RPM :- REVOLUTIONS PER MINUTE
RS :- REFRIGERANT SUCTION
SAD :- SUPPLY AIR DIFFUSER
SAG :- SUPPLY AIR GRILLE
S.D :- SUPPLY DUCT
SF :- SUPPLY FAN
S.G :- SUPPLY GRILLE
SD :- SMOKE DETECTOR
SP :- STATIC PRESSURE
SQ :- SQUARE
SR :- SHORT RADIUS
S.R-X :- SUPPLY REGISTER TYPE-X
SS :- STAINLESS STEEL
SU :- SPLIT UNIT
VCD :- VOLUME CONTROL DAMPER
WB :- WET BULB
WG :- WATER GAGE

SYMBOLS

 HWS
HOT WATER SUPPLY
 HWR
HOT WATER RETURN
 :- PANEL STEEL RADIATOR
 GATE VALVE
 GLOBE VALVE
 DRAIN COCK
 CHECK VALVE
 STRAINER
 THERMOSTATIC REGULATING VALVE
 BALANCE VALVE
 BUTTERFLY VALVE
 PIPE FLEXIBLE CONNECTOR
 AUTOMATIC AIR VENT
 PRESSURE RELIEF VALVE
 PUMP
 RELIEF VALVE
 UNION
 CD TO FD
CONDENSATE DRAIN TO FLOOR DRAIN
 HUM
HUMIDIFIER
 :- CASSETTE AC SPLIT UNIT
 :- DUCT MOUNTED AIR GRILLE (DAG)
 :- ROOF MOUNTED EXHAUST FAN
 :- WALL MOUNTED EXHAUST GRILLE
 :- AIR TRANSFER GRILLE
 T
TEMPERATURE SENSOR
 :- SAND-TRAP LOUVRE
 :- THRU WALL EXHAUST FAN
 :- AC SPLIT INDOOR UNIT
 :- AC SPLIT CONDENSING OUTDOOR UNIT
 :- AC SPLIT FLOOR STANDING INDOOR UNIT
 :- SUPPLY SECTION FAN
 :- DUCTED EXHAUST/SUPPLY FAN (EF)

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QIBLA FOR
KABUL = 253°
FROM NORTH

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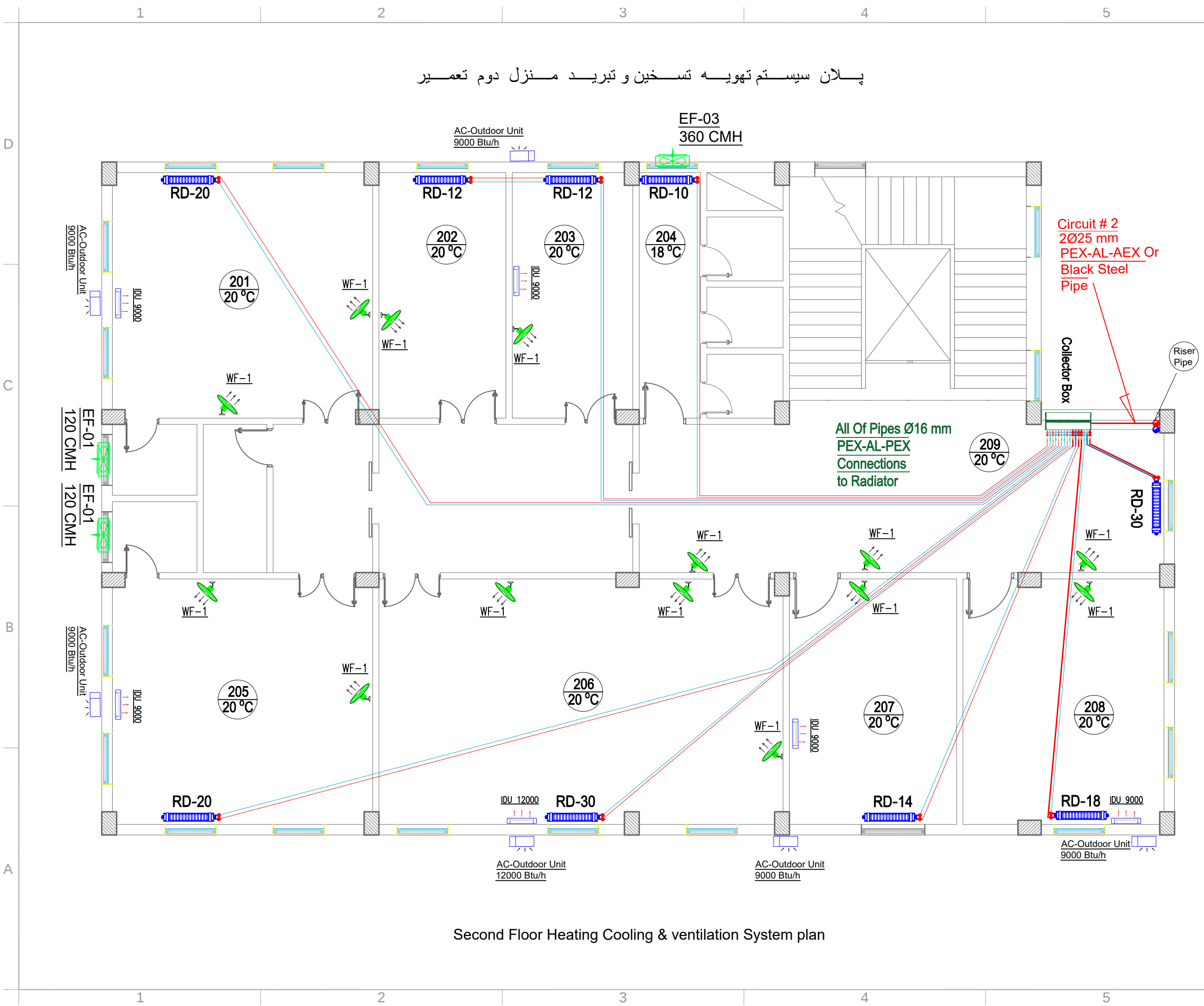
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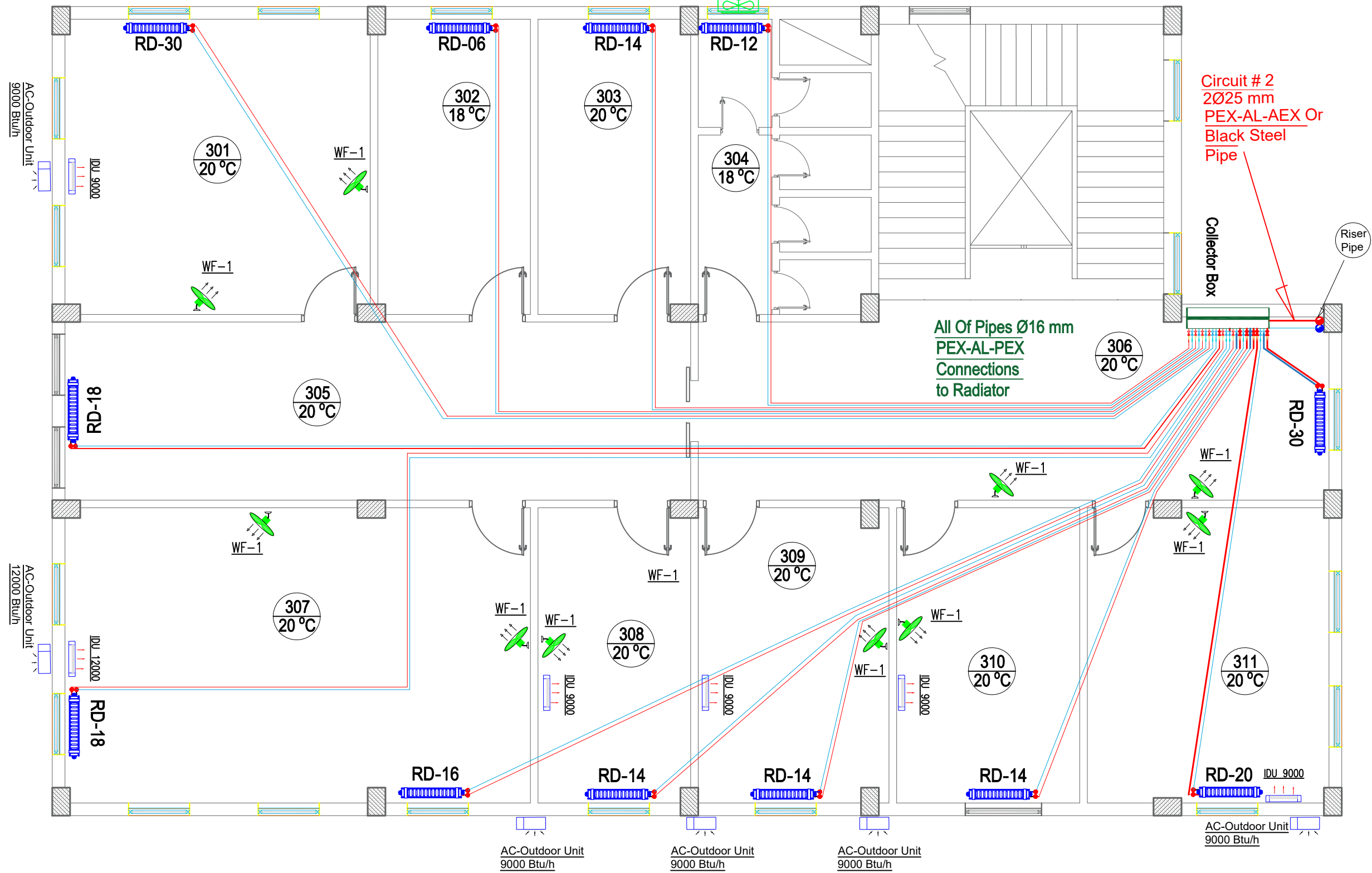
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پلان سیستم تهویه تسخین و تبرید منزل سوم تعمیر

EF-03
360 CMH



Third Floor Heating Cooling & ventilation System plan

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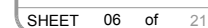
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B

A



180 Liters

1

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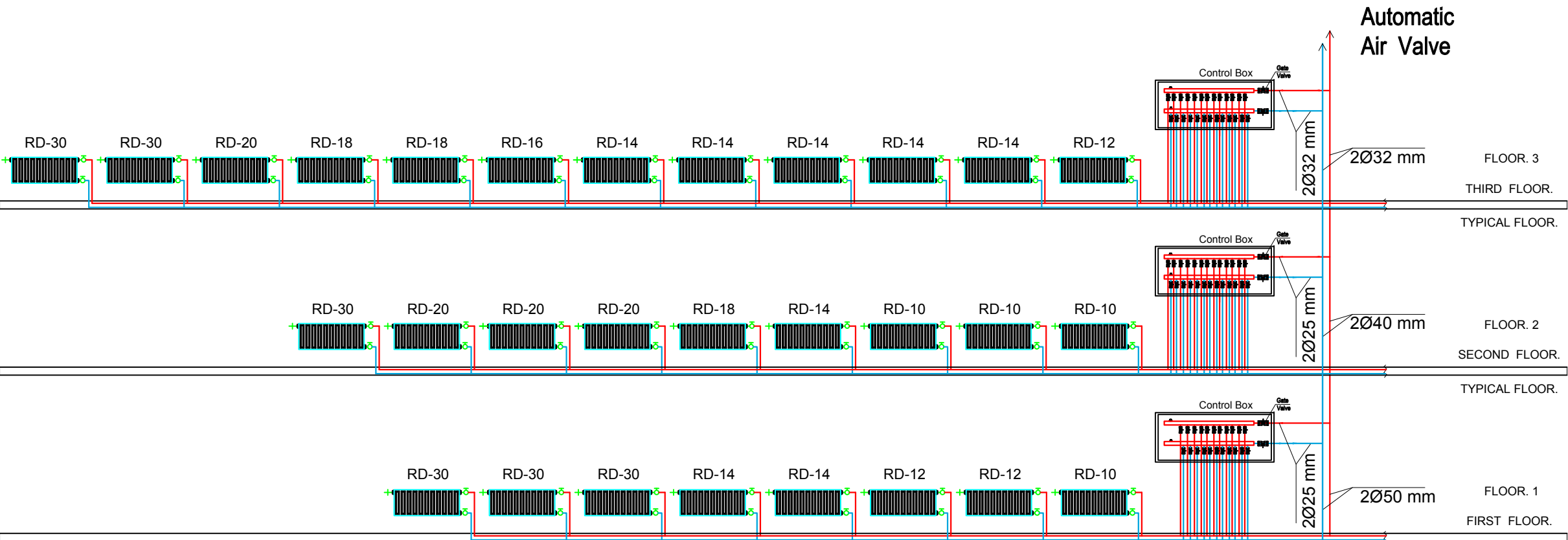
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مشخصات کلکتور . جعبه توزیع . نل های افقی عمودی رایزر وردیاتور ها

Collector Box # 1 Circuit # 1

Automatic
Air Valve

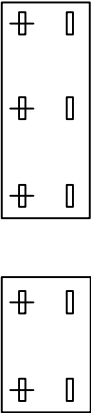


جدول مشخصات رادیاتور ها

SCHEDULE OF RADIATORS (RD)

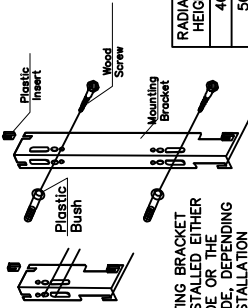
TAG NUMBER	SYMBOL	MODEL/TYPE	HEATING PROPERTIES		DIMENSION (mm)		NET WEIGHT (kg/m)	WATER CONTENT (Lit/m)	REMARK
			HEAT OUTPUT (Watt)	MEAN WATER TEMPERATURE RANGE	HEIGHT (H)	LENGTH (L)			
RD-05		TYPE 22 - PKKP	762	65 °C-75 °C	500	500	25.5	5	WALL MOUNTED
RD-0.6		TYPE 22 - PKKP	914	65 °C-75 °C	500	600	25.5	5	WALL MOUNTED
RD-08		TYPE 22 - PKKP	1219	65 °C-75 °C	500	800	25.5	5	WALL MOUNTED
RD-10		TYPE 22 - PKKP	1524	65 °C-75 °C	500	1000	25.5	5	WALL MOUNTED
RD-12		TYPE 22 - PKKP	1829	65 °C-75 °C	500	1200	25.5	5	WALL MOUNTED
RD-14		TYPE 22 - PKKP	2134	65 °C-75 °C	500	1400	25.5	5	WALL MOUNTED
RD-16		TYPE 22 - PKKP	2438	65 °C-75 °C	500	1600	25.5	5	WALL MOUNTED
RD-18		TYPE 22 - PKKP	2743	65 °C-75 °C	500	1800	25.5	5	WALL MOUNTED
RD-20		TYPE 22 - PKKP	3048	65 °C-75 °C	500	2000	25.5	5	WALL MOUNTED
RD-30		TYPE 22 - PKKP	4572	65 °C-75 °C	500	3000	25.5	5	WALL MOUNTED

SUSPENSION BRACKET DIMENSIONS



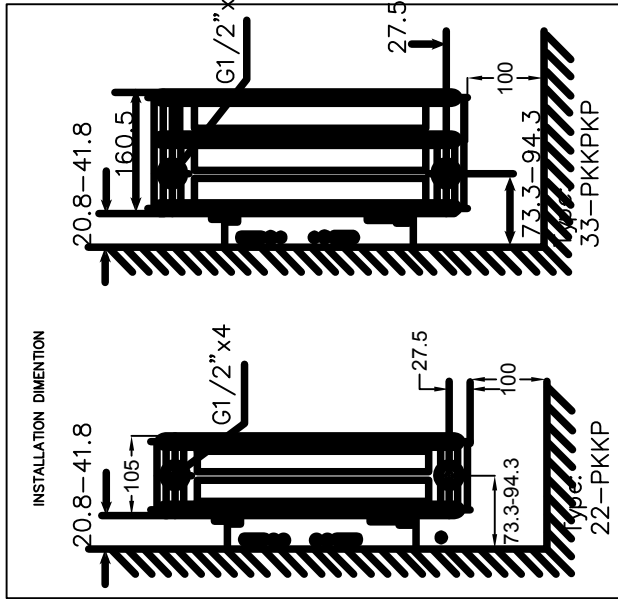
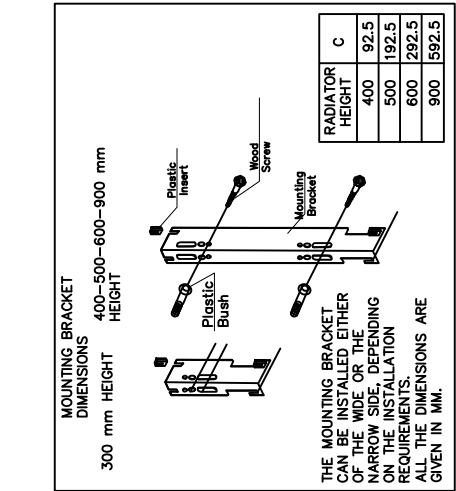
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		L1	L2	L1	L2
10-21-22-33	100	800	800	766.5	800
11	116.5	1800	866.5	833.5	866.5
L=Radiator Length-2xA		1900	866.5	833.5	866.5
RADIATOR HEIGHT	B	2000	900	900	866.5
300	115	2200	1000	1000	966.5
400	215	2400	1100	1100	1066.5
500	315	2600	1200	1200	1166.5
600	415	2800	1300	1300	1266.5
715		3000	1400	1400	1366.5

MOUNTING BRACKET DIMENSIONS



RADIATOR HEIGHT	C
400	92.5
500	192.5
600	292.5
900	592.5

THE MOUNTING BRACKET CAN BE INSTALLED EITHER OF THE WIDE OR THE NARROW SIDE, DEPENDING ON THE INSTALLATION REQUIREMENTS. ALL THE DIMENSIONS ARE GIVEN IN MM.



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دیتیل و مشخصات رادیاتور ها

LEGEND	
GATE VALVE	
RADIATOR	
SUPPLY PIPE (SP)	
RETUNR PIPE (RP)	
REVERES RETURN (RRP)	
GATE VALVE	GV
RADIATOR	RD
BATHROOM RADIATOR	BRD
REDUCER	
BACK FLOW PREVENTION	

نمبر اتاق مطابق
محاسبه تسخین

101
20 °C

درجه حرارت اتاق

GENERAL NOTES:

1-WATER SHALL BE DISTRIBUTED
BY MEANS OF STANDARD
WEIGHT (SCHEDULE40) BLACK STEEL

2-ALL PIPES ARE INSULATED EXCEPT
SPECIFIED.

01 | Room Symbols Detail
REF. SCALE: NTS

نمبر اتاق

Space 101

RD-30

ابعاد رادیاتور
پانلی آهنی

نل دخولی آب به
رادیاتور

نل خروجی آب از
رادیاتور

وال هواکش رادیاتور

کنترول وال رادیاتور

ارتفاع رادیاتور

832x500

عرض رادیاتور

وال هواکش رادیاتور

وال تنظیمی یا
کنترول وال
رادیاتور

نل دخولی آب
به رادیاتور

نل خروجی آب از
رادیاتور

01 | Steel Panel Radiator Detail

REF.

SCALE: NTS

02 | Towel Radiator Detail

REF.

SCALE: NTS

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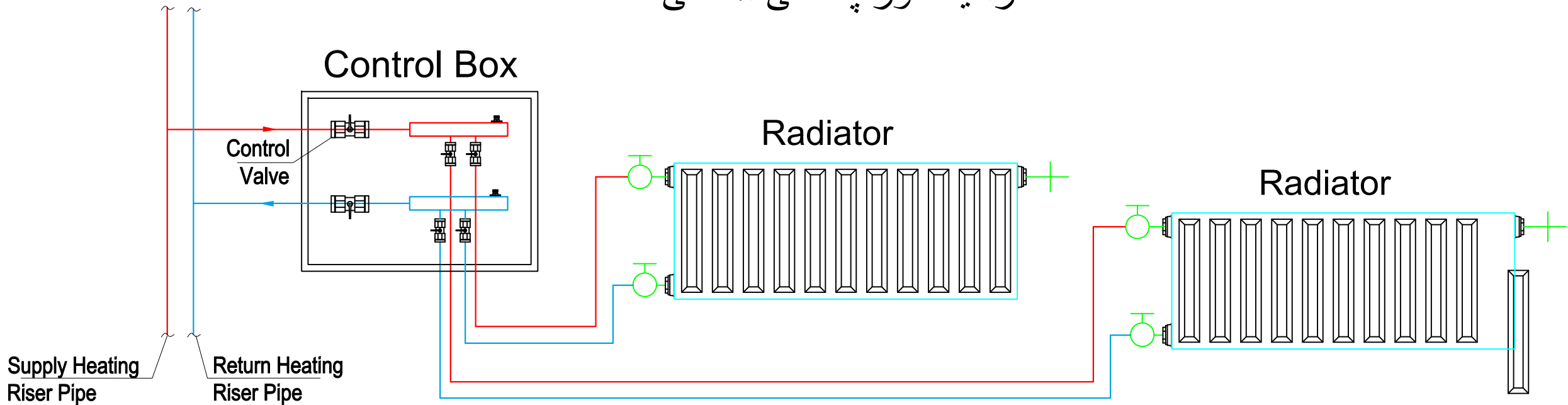
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دیتیل و مشخصات رادیاتور ها

رادیاتور پانلی آهنی



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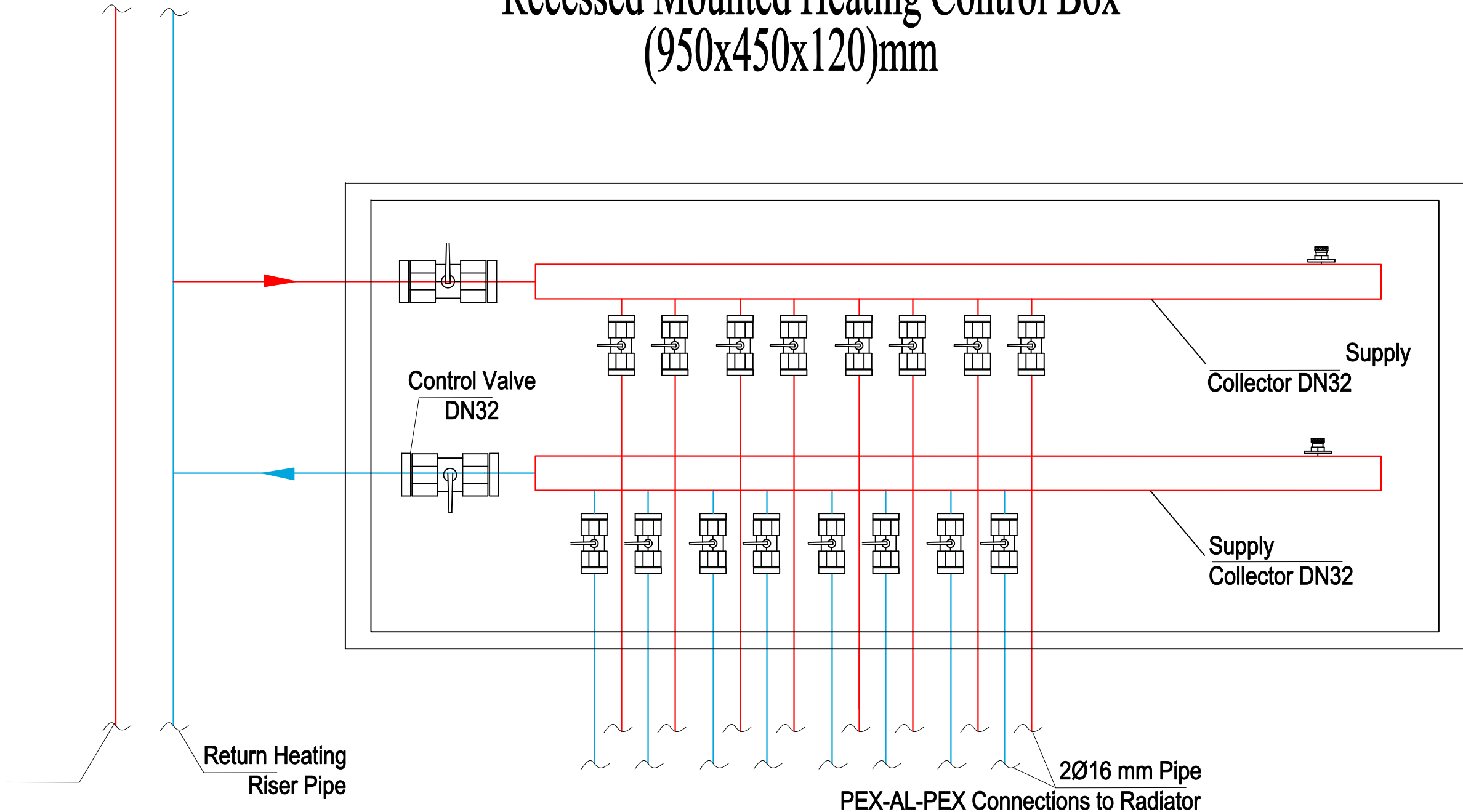
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مشخصات جعبه توزیع پایپ های رفت برگشت

Recessed Mounted Heating Control Box (950x450x120)mm



PROJECT NAME:

FISTULA CARE CENTER IN MALALAI
MATERNITY HOSPITAL IN
KABUL- AFGHANISTAN

OWNER:

AFGHAN FAMILY GUIDANCE ASSOCIATION
FOCAL NAME:
E-MAIL:
CELL #:



DEVELOPER:

WEB:
E-MAIL:
PHONE #:
FAX #:

CLIENT:

MINISTRY OF PUBLIC HEALTH

PROJECT NO / KEY:

DESIGN / PROJECT STATUS:
FOR TENDER ONLY

KEYPLAN:



DRAWN BY:
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- AFGA

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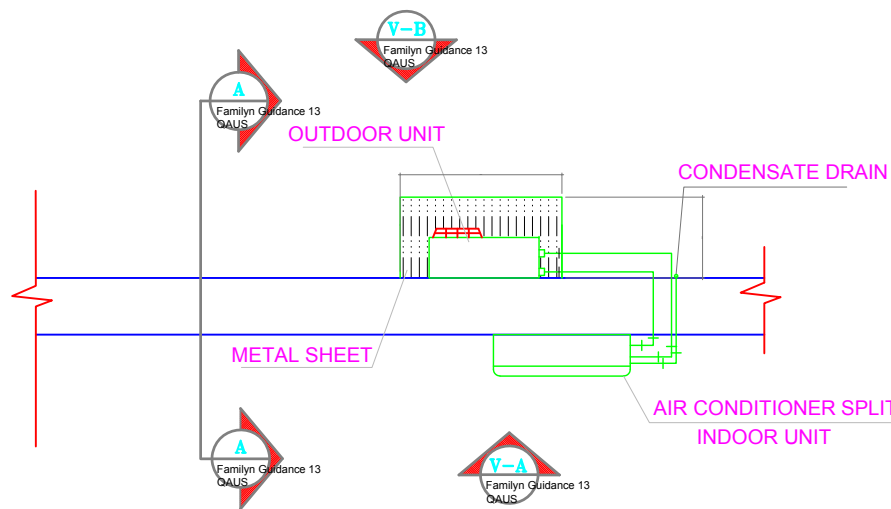
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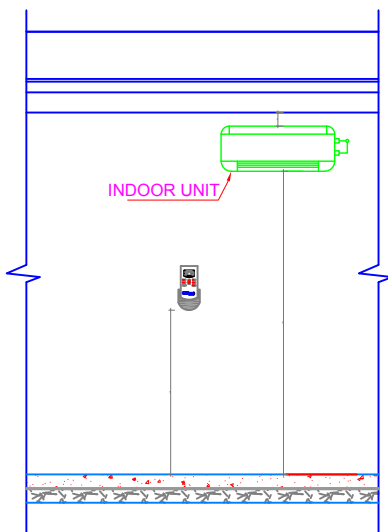
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01 AC SPLIT UNITS LOCATION

REF.

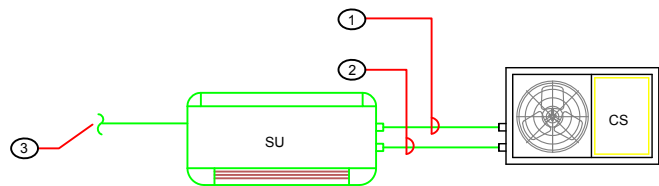
SCALE: NTS



02 VIEW A

REF.

SCALE: NTS



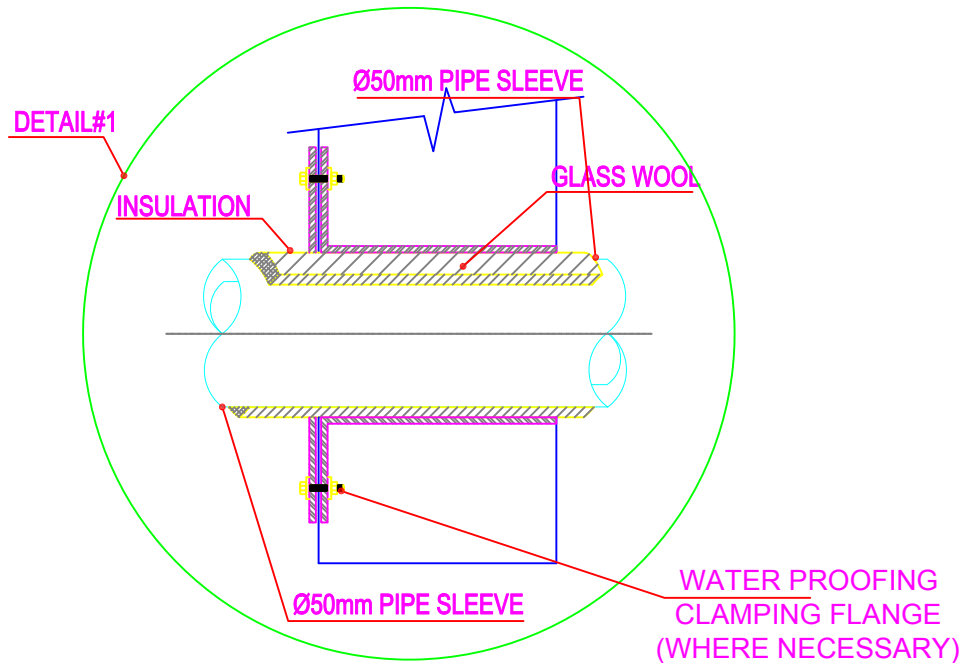
NOTES:

- 1 RETURN GAS REFRIGERANT COPPER PIPE
15.00mm
- 2 SUPPLY LIQUID REFRIGERANT COPPER PIPE
6.35mm
- 3 DRAIN PIPE

03 AC SPLIT UNIT DIAGRAM

REF.

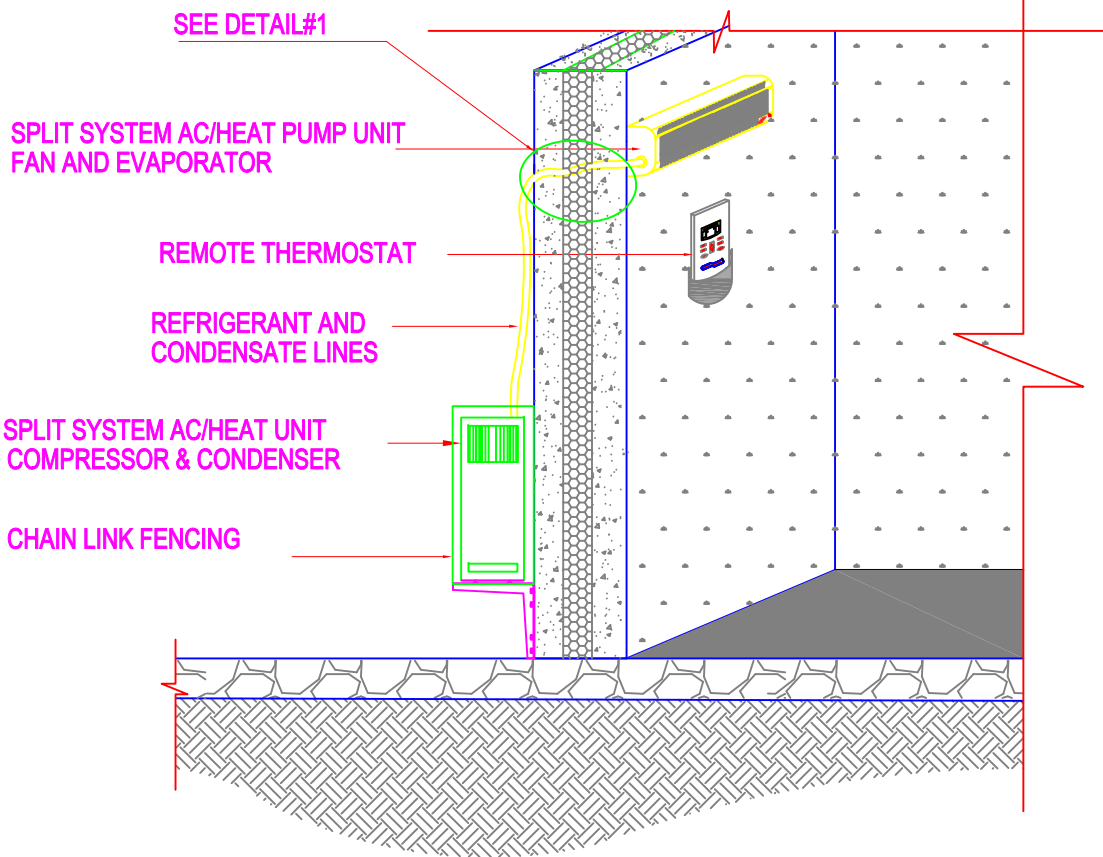
SCALE: NTS



01 AC DETAIL WALL MOUNTED

REF.

SCALE: NTS



Air conditioners Specification

Wall mounted type splite AC					Floor standing split AC	
Model indoor unit	S09 AW NEO	S12 AW NEO	S18 AW N50	S24 AW N50	P03AH NR1	P05AH NT0
Capacity BTU/hour	9000	12000	18000	24000	36000	48000
cooling Capacity KW	2.6	3.5	5.3	7	7.5	12.6
Heating Capacity KW	3.6	4	6.1	8.4	8.1	14.1
Running Current Cooling Amps	3	4.8	7	11	13	9.5
Running Current Heating Amps	4	5.7	8	13	13	9
Power input Cooling KW	0.7	1.1	1.6	2.5	2.8	5.3
Power input Heating KW	0.9	1.3	1.7	3	2.8	5
Power Supply to unit v/phase/Hz	240/1/50	240/1/150	240/1/50	240/1/50	240/1/50	415/3/50
Nois DBA	33	39	42	45	48	53
Indoor unit WxHxD mm	895*282*165	895*282*165	1090*300*180	1090*300*180	570*1820*317	590*1850*440
Outdoor unit WxHxD mm	770*545*245	770*545*245	870*655*320	870*808*320	870*655*320	900*1165*370
Max. distance in & out m	20	15	30	30	30	40

GENERAL NOTES

- 1- All split units shall be controlled by thermostat
- 2- The remote control shall be installed 5 feet above the finishing floor.
- 3- The condensing unit will contain compressor condensing coil and all internal controls/fittings complete to include a weatherized housing.
- 4- Outdoor unit shall be mounted on a concrete pad.
- 5- Compressor refrigerant suction and liquid piping shall be sized, insulated and installed according to unit manufacture recommendation.
- 6- Each exhaust fan shall be provided and inter locked with motorized dumpers which close automatically when the fan is not running.
- 7- Frost drain for AC split units shall be installed 1m away from exterior wall of the building.

01 | Ac- Specifications Wall mounted

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APPROVED BY: - AFGA	

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D

C

B

A

1

2

3

4

5

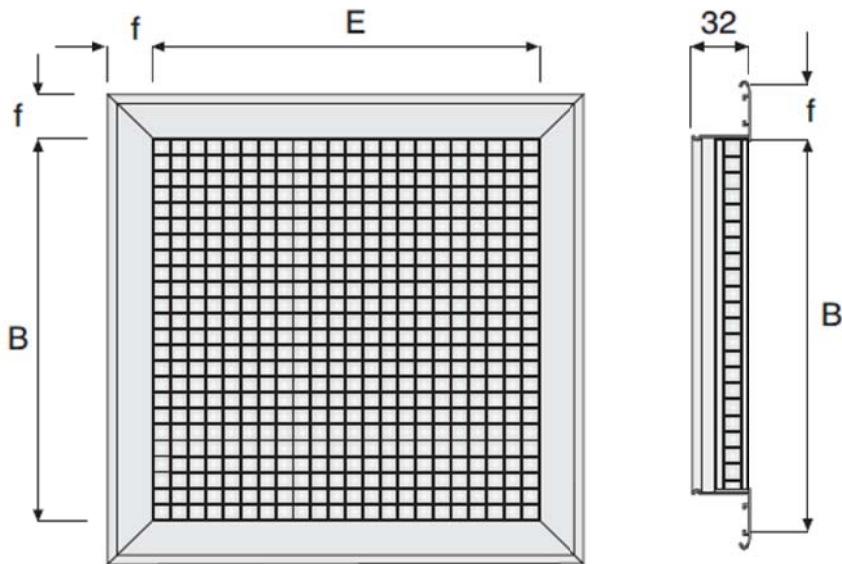
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Standard Dimensions

E x B (mm)	A _{eff.} (m ²)
150 x 150	0,0205
200 x 200	0,0364
250 x 250	0,0569
300 x 300	0,0819
350 x 350	0,1115
400 x 400	0,1456
450 x 450	0,1843
525 x 525	0,2508

Frame

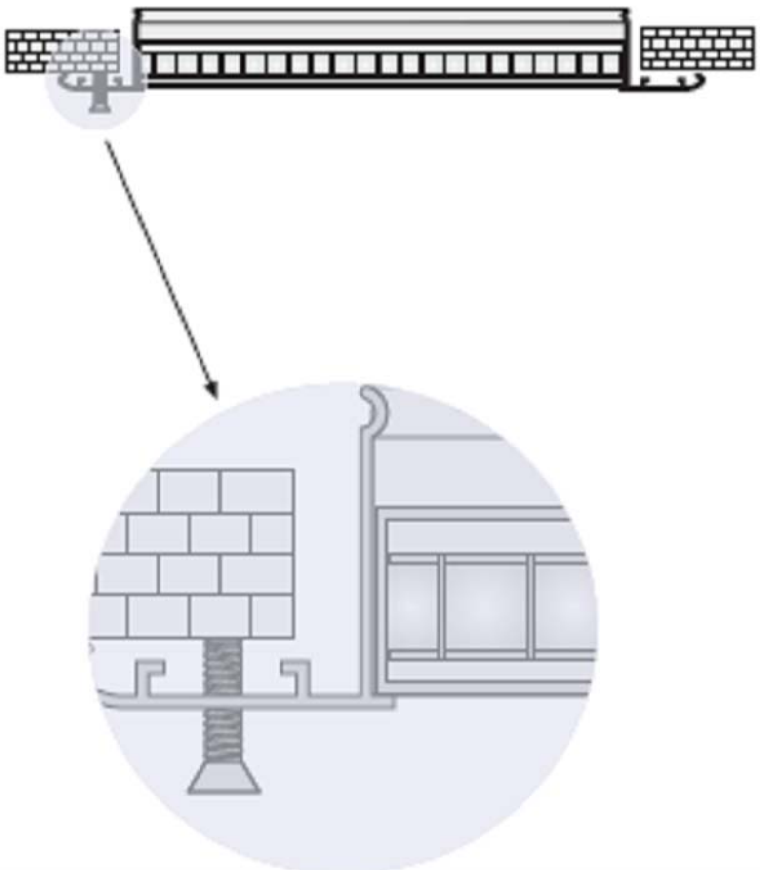
f (mm)
22
32



Technical Data

V _{eff.} (m/s)	Pressure loss (Pa)	Sound power level dB(A)
1,20	2	<20
2,00	4	<20
2,50	8	23
3,00	12	27
4,00	21	34
5,00	29	40
6,00	38	44
7,00	46	46
8,00	51	47
9,00	63	48
10,00	71	49

Installation



A set of Ø 4.2 x 38 mm screws, painted the same colour, are given with the product.

01

Air Grille Standart Dimentions & Detail

REF.

SCALE: NTS

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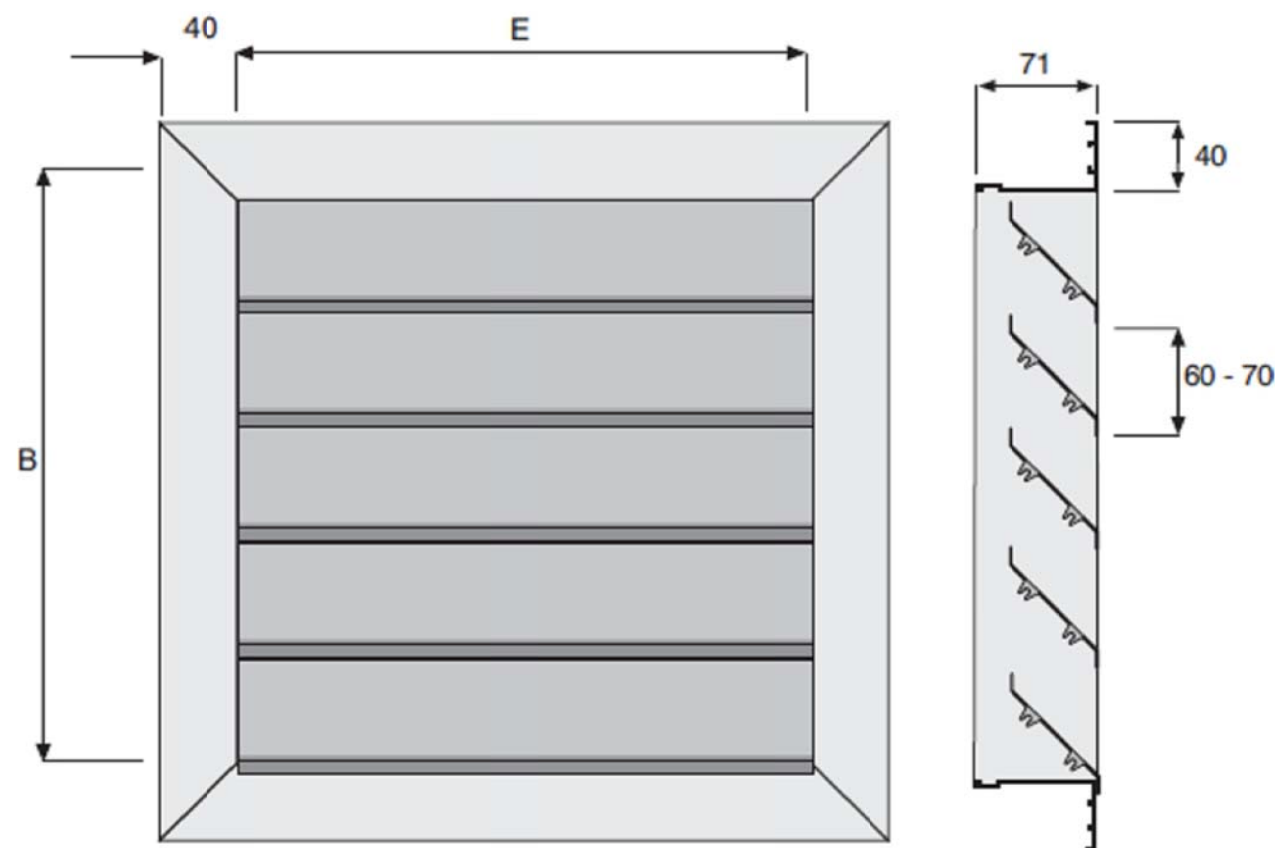
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Standard Dimensions

E (mm)	B (mm)
200	224
300	294
400	364
500	434
600	504
700	574
800	644
900	714
1000	784
1100	854
1200	924
1300	994
1400	1064
1500	1134
1600	1204
1700	1274
1800	1344
1900	1414
2000	1484



Materials

The frame and the blades are made from ETIAL-60 norm aluminium profiles.

Accessories

Wire Mesh

A mesh of wires with 12x12mm grids, it prevents the entry of large flying particles and animals.

01

LOUVRE STANDARD DIMENSIONS & DETAIL

REF.

SCALE: :NTS

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EXHAUST FANS SCHEDULE

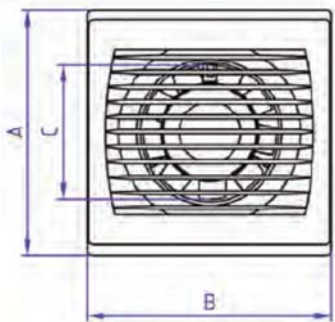
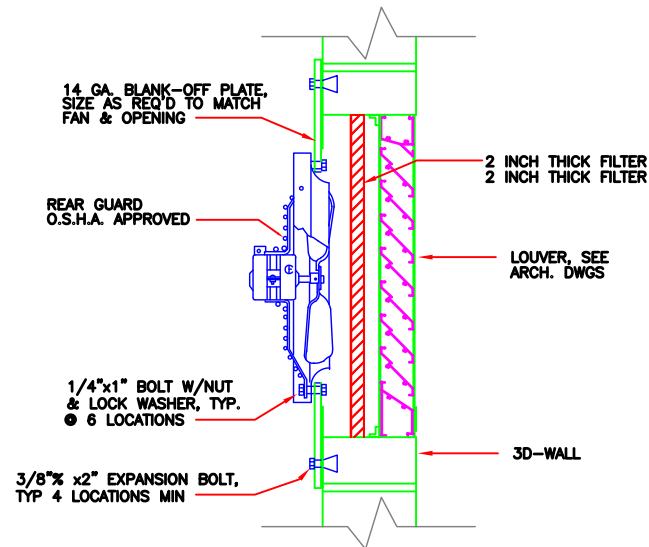
UNIT NUMBER	QTY.	TYPE	LOCATION	MAX WATTS	ELECTRICAL DATA			AIR FLOW CMH	E.St. P Pa
					VOLTAGE	PHASE	HERTZ		
EF-01	2	Axial	Wall / Window Mounted	36	230	1	50	120	30
EF-02	1	Axial	Wall / Window Mounted	46	230	1	50	240	30
EF-03	3	Axial	Wall / Window Mounted	58	230	1	50	360	30
EF-04	0	Axial	Wall Mounted	480	230	1	50		400
EF-05	0	Centrifugal	Wall Mounted	480	480	1	50		400
EF-06	0	Centrifugal	Roof Mounted	480	230	1	50		450

NOTES:-

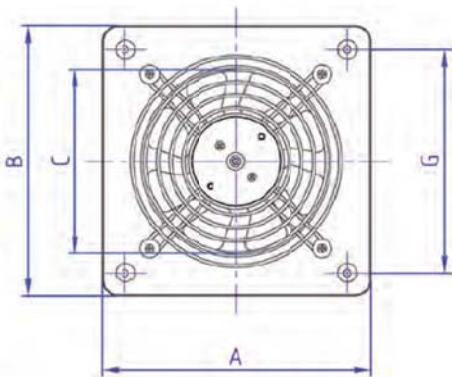
- 1- FINAL STATIC PRESSURE TO BE DETERMINED UPON ACTUAL SELECTION OF EQUIPMENT & AGAINST FINAL LAYOUT.
- 2- THE FAN IS PROVIDED WITH BACKDRAFT DAMPER.
- 3- FAN IS INTERLOCKED WITH MANUALLY OPERATED WALL SWITCH.

NOTE:

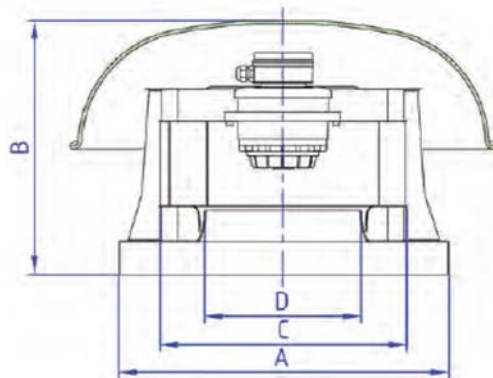
1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
2. SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
3. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.



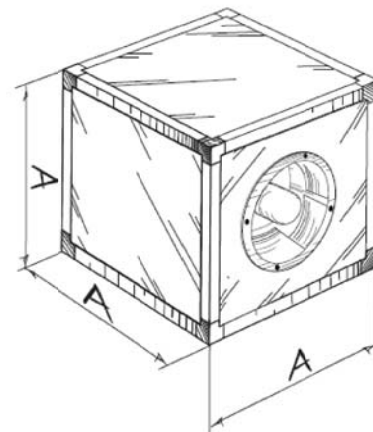
01 WINDOW MOUNTED EXHAUST FAN
REF. SCALE: NTS



02 WALL MOUNTED EXHAUST FAN
REF. SCALE: NTS



03 ROOF MOUNTED EXHAUST FAN
REF. SCALE: NTS



01 CENTRIFUGAL SUPPLY / EXHAUST FAN
REF. SCALE: NTS

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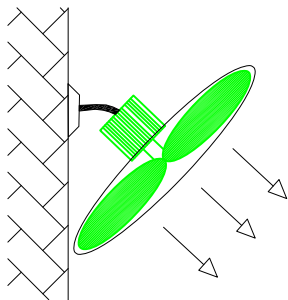
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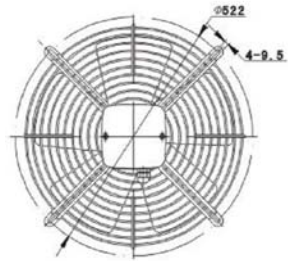
FANS SCHEDULE									
UNIT NUMBER	QTY.	TYPE (NOTE 1)	FAN DIAMETER	MAX WATTS	ELECTRICAL DATA			AIR FLOW CMH	SPEED RPM
					VOLTS	PHASE	HERTZ		
WF-1	35	Capacitor	350 mm	48	220	1	50	2880	1475
CF-1	0	Capacitor	900 mm	55	220	1	50	6600	430

NOTES:-
1- (CAPACITOR) WITHOUT LIGHT FIXTURE
2- ALL CEILING FANS SHALL BE PROVIDED WITH REMOTE WALL MOUNTED, ON-OFF SWITCH LOCATED IN ELECTRICAL DRAWINGS.

Wall Fan Detail

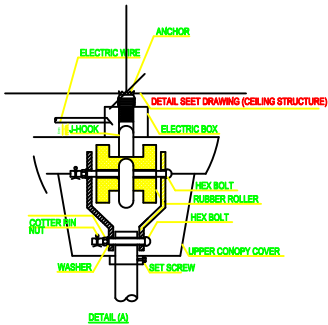


DETAIL (A)

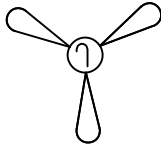


DETAIL (B)

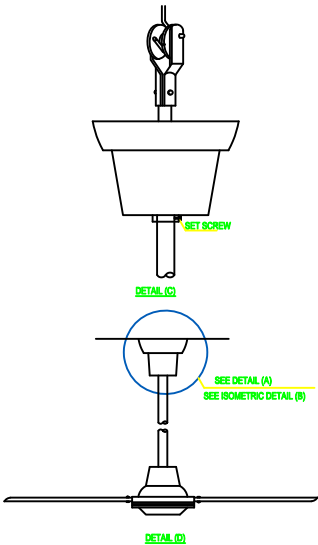
Ceiling Fan Detail



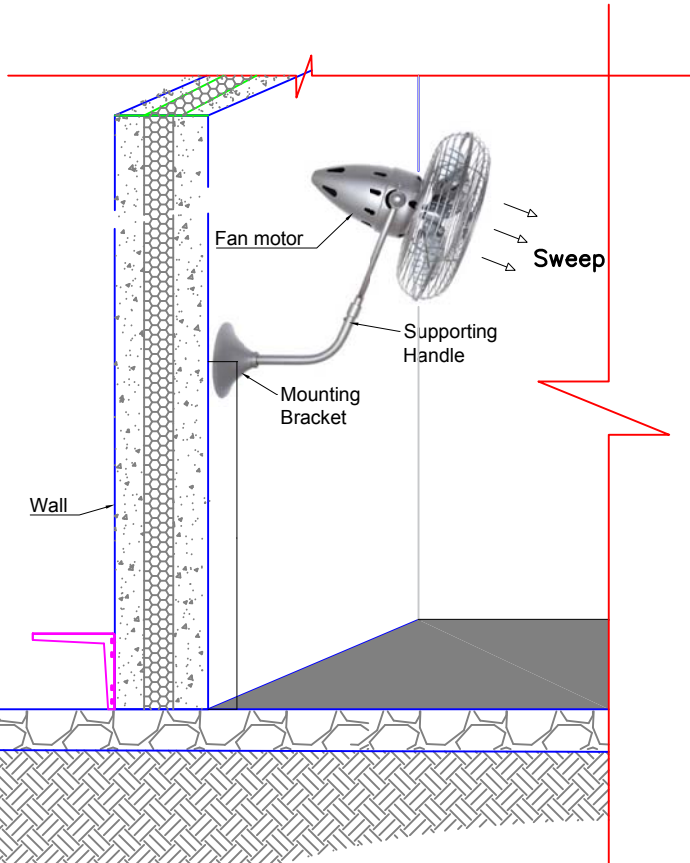
DETAIL (A)



DETAIL (B)



02 WALL MOUNTED EXHAUST FAN
REF. SCALE: :NTS



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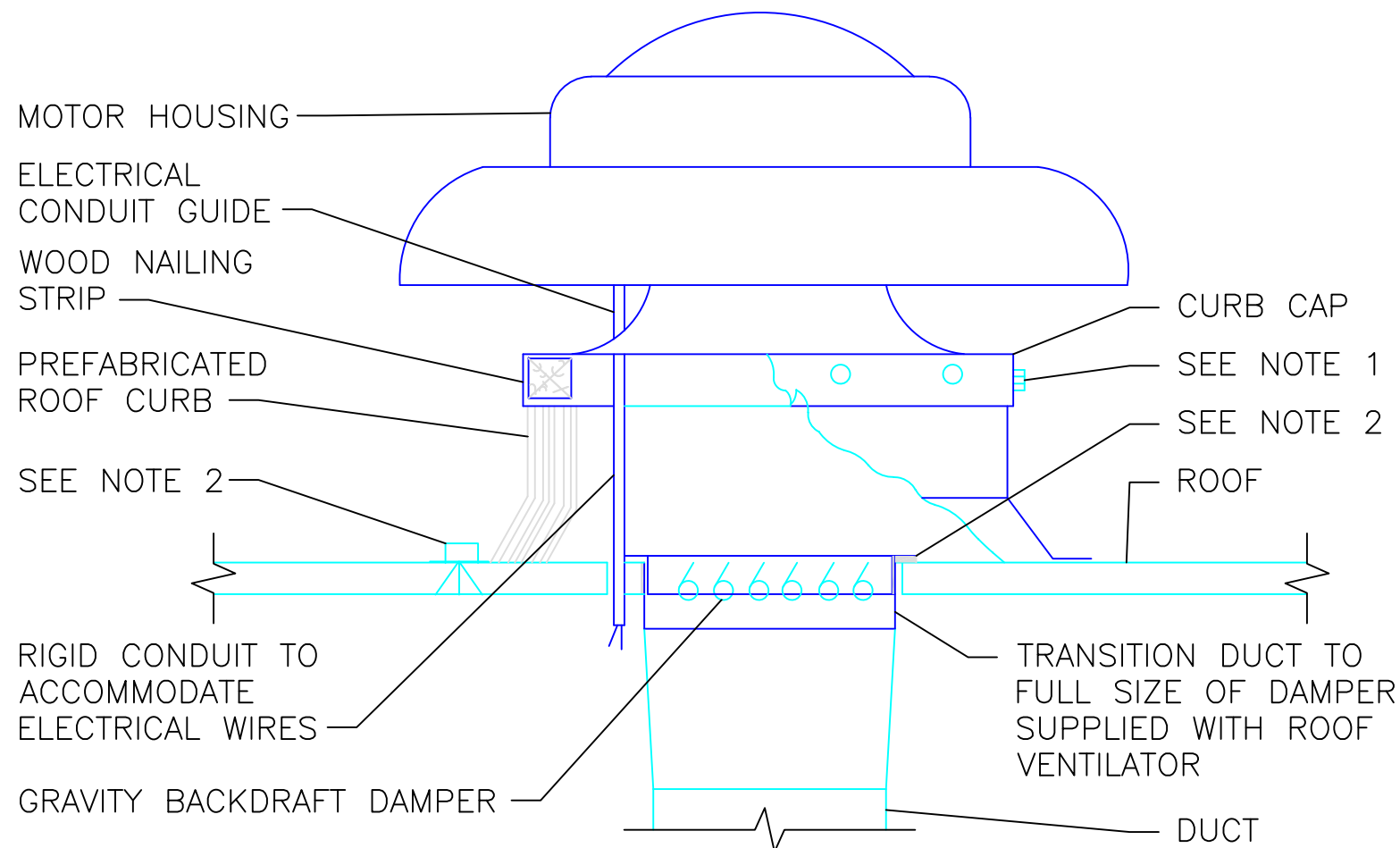
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01

Power Roof Ventilator

REF.

SCALE: NTS

NOTE:

1. SECURE CURB CAP TO WOOD NAILING STRIP WITH 3/8" [10mm] CADMIUM PLATED LAG BOLTS NOT OVER 12" [300mm] ON CENTER.
2. SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF WITH EXPANSION BOLTS (CONCRETE ROOF) OR RUST RESISTANT BOLTS (METAL DECK AND BAR JOIST ROOF).
3. RUN ELECTRICAL LINES THROUGH CLEARANCE HOLE PROVIDED IN GRAVITY DAMPER, THEN THROUGH VENTILATOR ELECTRICAL CONDUIT GUIDE.

جداول و مشخصات تجهيزات تخنيكي اساسي سيستم مركز گرمي

CLOSE EXPANSION TANK SCHEDULE					
ITEM	Manufacture & Model No.	System	Type	Capacity (Lit)	EMARK
ET1	_____	Heating	Close	180	1

COAL AND WOOD BOILER TECHNICAL DATA

CAPACITY KW(Kcolr/H)	SIZE(LXWXH)MM	FAN ELECTRICAL POWER(W)	RPM	FEEDING DOOR (WXH)MM	OPERATING PRESSURE(Bar)
97.2(83630)	3543*2425*2050	850	2850	580X410	12

HOT WATER CIRCULATION PUMP

TYPE	FLOW RATE(m3/h)	HEAD(M)	MATERIALS	RPM	OPERATING PRESSURE(KPa)	ELECTRICAL POWER(KW)	WIGHT(KG)
HWP-1	8 Section Side Discharge Side	4	CAST IRON/ STAINLESS	2850	PN10	0.621	19.5

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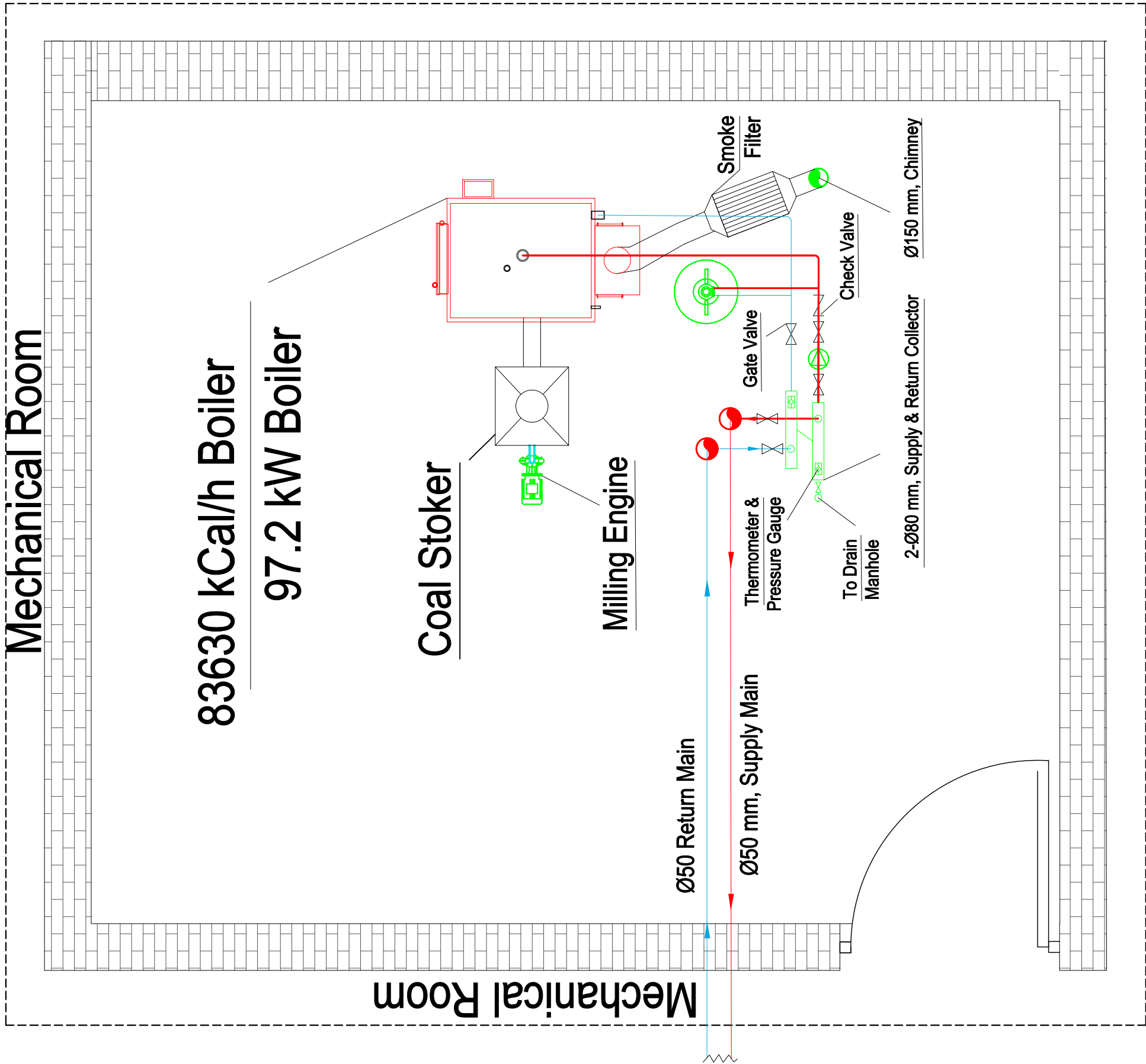


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اطلاق تخنیک‌کی باتجهیزات اساسی سیستم مرکز گرمی



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